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| EXAMINER | |
|---|---|
| CANELLA, KAREN A | |
| **ART UNIT** | **PAPER NUMBER** |
| 1643 | |

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/853,188 | ABULJADAYEL, ILHAM MOHAMED SALEH SAEED | |
| | Examiner | Art Unit | |
| | Karen A. Canella | 1643 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-3,5,7,9,11,13,15,17 and 19-107 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 1-3,5,7,9,11,13,15,17 and 19-107 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

Claims 1, 2, 9, 17, 40, 41 have been amended. Claims 4, 6. 8. 10, 12, 14, 16 and 18 have been canceled. Claims 101-107 have been added. Claims 1-3, 5, 7, 9, 11, 13, 15, 17, 19-107 are pending. Claims 42-100, drawn to non-elected inventions, are withdrawn from consideration. Claims 1-3, 5, 7, 9, 11, 13, 15, 17, 19-41 and 101-107 are under consideration

Text of title 35, U.S. code not found in this action can be found in a prior action.

It is restated that the instant invention will be given priority only to UK application 0101315.0, filed January 18, 2001.

Claims 19-39 are objected to for being dependent in part on canceled claim 4.

Claim 9 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 5. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claims 101-107 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 101 carries the limitation of a "first" support hook. the specification describes the device with a support hook for hanging a blood bag on page 22, lines 24-25, wherein said support hook forms part of an electronic balance. This description fails to provide adequate support for a "first" support hook as only one support hook has been described..

Claims 101-107 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a device for treating a starting cell population, wherein

said population constitutes blood, does not reasonably provide enablement for a starting cell population which is any other cellular population. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

Claims 101-107 encompass a device wherein said device comprises a first support hook for attachment of an inlet storage container containing a starting cell population. The specification states that a blood bag hangs from said support hook. As blood is a suspension of cells which can be collected in a blood bag, and because the specification does not teach any other cell population which can be collected in a blood bag and used in the instant method. The M.P.E.P. (2164.08(a)) states that

*A single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph. In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor.). When claims depend on a recited property, a fact situation comparable to Hyatt is possible, where the claim covers every conceivable structure (means) for achieving the stated property (result) while the specification discloses at most only those known to the inventor*

In the instant case, the only recited means for using the device of claims 101-107 is for the single recited means of a blood bag as input into the device.

Claims 1-3 and 15, 17, 19-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruenberg (U.S. 5,627,070) in view of Glockner et al (WO 00/53797) and Milande et al (WO 99/28438).

Claims 1, 2, 40 and 41 have been amended to specify the limitation "mixing means for mixing the agent and the cell population in the chamber". when given the broadest reasonable interpretation "mixing the agent and the cell population in the chamber" encompasses the mixing of the agent containing culture medium surrounding adherent cells, as well as mixing of the agent containing culture medium and cells growing in suspension, such as hematopoietic cells.

Further, when given the broadest reasonable interpretation, the preamble to claims 1, 2, 40 and 42 which recites the intended use of the claimed device is of no patentable weight in determining the limitations of the claim (M.P.E.P. section 2111.02)
*If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction. Pitney Bowes, Inc.v. Hewlett-Packard Co., 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir.1999). See also Rowe v. Dror, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir.1997.)*

Greunber discloses hollow fiber cartridges comprising a housing and a plurality of capillaries, and that the interior of the walls of the plurality of capillaries define a lumen extending between inflow and outflow openings , and the outside of the capillaries and the housing define an extra capillary space (ECS) where cell growth or population expansion takes place which fulfills the specific embodiment of a chamber. Greunber discloses that the housing includes one or two ports providing access from the ECS so that cells may be added or removed therefrom (column 1, lines 8-25) which fulfills the specific embodiments of claims 3, 4, 15 and 16 requiring means for cellular harvesting. Greunber discloses a device for the culturing of cells in bundles of hollow fibers, said device comprising an extracapillary connecting mechanism which includes a connecting chamber in fluid communication with the first and second primary orifices, a monitoring mechanism for monitoring the presence of oxygen gas and pH, a gas transfer mechanism for exchanging gas across a membrane separating the media from a controlled gaseous environment within the gas transfer mechanism, and a gas delivery mechanism for delivering specific gases such as oxygen, carbon dioxide and nitrogen to the controlled gaseous environment (column 5, lines 9-20) which fulfills the specific embodiments of claims 1-4 and 11-14 regarding the "transfer means" and claims 1-4 regarding the "carbon dioxide control means". Gruenberg discloses that the monitoring mechanism for oxygen and pH combined with the controlled gas transfer mechanism provides a consistent homogeneous environment for the cells and overcomes the resistance of the capillaries to diffusion of oxygen because oxygen can be added to the inside of the ECS and does not have to diffuse from the

lumen (column 7, lines 19-25). Gruenberg discloses that the harvested cells are captured in the centrifuge of the apheresis instrument and that this results in the isolation of cells in a completely closed system minimizing the risk of contamination (column 8, lines 23-26) which fulfills the specific embodiments of claims 3 and 4 regarding sealing means for sealing a storage container comprising a population of cells.

Greunber discloses that the device is automated by a computer-controlled mechanism capable of adjusting both the oxygen concentration, and pH and providing fresh growth media (column 9, lines 19-27, column 10, line 63 to column 11, line 13) which fulfills the specific embodiments of and claims 1-4 and 17-18 regarding the communicating means.. Greunber discloses an industrial scale device comprising a plurality of cartridges (column 11, lines 34-37). Greunber discloses a gas flow metering device including a heating device (column 12, line 63 to column 13, line 13) which fulfills the specific embodiments of claims 1-4 regarding an "incubator means" and a growth media reservoir heated to 37 degrees (column 12, lines 18-23). The monitoring of pH by a pH electrode further fulfills the specific embodiment of claims 17 and 18, because monitoring the pH of a cell culture medium is indicative of monitoring the cell concentration in the culture which fulfills the specific embodiment of claim 3 and 4 requiring means for conducting cell counts.

Greunber discloses the above device further comprising an apheresis instrument to harvest the cells by forcing the cells out by centrifugal force and capturing the flushing media into a waste container (column 15, lines 21-33) which also fulfills the specific embodiments of claims 1-4 and 15-16 requiring "harvesting means".

Greunber discloses that any type of cell which can grow in a cell culturing device, can be cultured or grown in the cell growing devices of the present invention (column 16, lines 8-10). Greunber does not disclose a cell culture device in which cells can be mixed with a testing agent, or the physical means for said mixing.

Glockner et al teach an in vitro method for the testing of active ingredients in cells using a culture dish, and a device for carrying out the testing (abstract). Glockner et al thus provides a culture container in which a mixing means can be implemented (Figure 2a, item 7) and a means for introducing an agent for testing, because said means for introducing an agent capable of

increasing the relative number of undifferentiated cells need not be employed for the actual delivery of such an agent, but need only be "capable" of doing so.

Milande et al teach a device for the growth of hematopoietic cells, and provides a device in which a mixing means can be implemented (abstract).

It would have been prima facie obvious at the time the claimed invention was made to provide a magnetic stirrer as a means for distributing a homogenous concentration of a test agent onto the cells in culture. One of skill in the art would have been motivated to do this by the general knowledge in the art that experimental variations will result from the use of a solution which is not homogenous with respect to the active agent, and one of skill in the art would be motivated to avoid experimental variation in order to more easily interpret the effects of a test agent on a cell. The recitation of "means of introducing into said chamber an agent capable of increasing the relative number of undifferentiated cells in a cell population is fulfilled by the teachings of Glockner et al because the means of introducing the agent for testing would be the same as the means for introducing the agent capable of increasing the relative number of undifferentiated cells.

Claims 1-3, 5, 7, 9, 15, 17 and 19-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruenberg (U.S. 5,627,070), Glovkner et al (WO 00/53797) and Milande et al (WO 99/28438) as applied to claims 1-3 and 15, 17 and 19-41 above, and further in view of Von Behrens et al (WO 93/16384)..

Claims 5 and 9 embody the device of claim 3 wherein the means for conducting cell counting is a coulter counter. Claim 7 embodies the device of claim 3wherein the means for conducting cell counting is a cytometer.

The combination of Gruenberg, Glovkner et al and Milande et al render obvious the specific embodiments of claims 1-3 and 15, 17 and 19-41 for the reasons set forth above. The references do not specifically teach inclusion of a cell counting device, such as a cytometer or a coulter counter within the device for growing cells in vitro.

Von Behrens et al teach methods of counting cells in a sample solution comprising cultured cells (page 21, lines 22-23). The methods taught by Von Behrends include measuring the electrical impedance across an orifice through which the sample solution is caused to flow,

and process the number and intensity of the pulses to provide enumeration data (for example, claim 5) which fulfills the specific embodiment of "Coulter counter". Von Behrens et al also teach cell counting by means of passing a sample through a flow cell where it is intersected with a laser bean and enumerating the number of cells by processing the light scattering data (for example claim 6) which fulfills the specific embodiments of "cytometer".

It would have been prima facie obvious at the time the claimed invention was made to include devices for cell counting by means of cytometer or Coulter counting as part of the automated tissue culture device. One of skill in the art would have been motivated to do so by the teachings of Von Behrends et al on the methods of counting cells from solutions comprising cultured cells, and because one of skill in the art would be motivated to have a totally automated cell culture device which quantifies the final number of cells, or quantifies samples intermediate to the end of the culture period in order to provide further data on the cell growth parameters of a particular batch of cells without requiring human labor.

Claims 1-3, 11, 13,15, 17 and 19-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruenberg (U.S. 5,627,070), Glovkner et al (WO 00/53797) and Milande et al (WO 99/28438) as applied to claims 1-3 and 15, 17 and 19-41 above, and further in view of Hochman (U.S. 5,976,825).

Claim 11 embodies the device of claim 3 wherein the transfer means for the agent is a syringe-driven motor. Claim 13 embodies the device of claim 3 wherein the transfer means for the calculated amount of agent is a syringe-driven motor.

The combination of Gruenberg, Glovkner et al and Milande et al render obvious the specific embodiments of claims 1-3 and 15, 17 and 19-41 for the reasons set forth above. The references do not specifically teach a motor-driven syringe. Gruenberg teaches a transfer means for the transference of cells wherein said transfer means is a syringe (column 8, lines 33-34). Gruenberg teaches the addition of relatively small amounts of serum, growth factors and hormones to the culture system (column 2, lines 43-48). Gruenberg does not specifically teach a motor-driven syringe as a transfer means of serum, growth factors or hormones.

Hochman teaches methods for screening candidate drugs for activity to prevent or inhibit Alzheimer's disease or CNS-based swelling comprising exposing glial cells in culture to drug

candidates (column 3, line 62 to column 5, line 15). Hochman teaches that the host computer system controlling the apparatus can comprise a peripheral control board to control mechanical interfaces, such as motor driven syringes (column 14, lines 52-57).

It would have been prima facie obvious at the time the claimed invention was made to incorporate a motor driven syringe into the device rendered obvious by the combination of Gruenberg, Glovkner et al and Milande et al. One of skill in the art would have been motivated to do so by the teachings of Hochman on the incorporation of peripheral devices into cell culture apparatuses. One of skill in the art would be motivated to do so in order to introduce relatively small amounts of serum, growth factors and hormones into the cell culture medium as needed. One of skill in the art would be motivated to have a motor driven syringe controlled by the microprocessor means in order to ensure that the cell culture was growing at an optimized rate by replenishing needed growth factors and hormones to said culture.

All other rejections and objections as set forth in the previous Office action are withdrawn in light of applicants amendments.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen A. Canella whose telephone number is (571)272-0828. The examiner can normally be reached on 11 am to 10 pm, except Wed, Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on (571)272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karen A. Canella, Ph.D.
4/14/2006

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